What is claimed is :

1.(original) A method for the esterification of a fatty acid F in a column with at least one multi-part packing having a catalyst in at least an upper part to define a catalytic reaction zone, a head at an upper end and a sump at an opposite end, said method comprising the steps of

feeding a fatty acid and an alcohol mixture into the catalytic reaction zone;

effecting an esterification of the fatty acid and alcohol mixture in the catalytic reaction zone by a heterogeneous catalysis;

producing an alcohol-rich stripping gas in the sump by vaporisation,

passing the alcohol-rich stripping gas in counter-flow through the catalytic reaction zone to strip water from the reaction zone;

at least partially liquefying the water-loaded gas at the head of the column to form a liquefied head product;

separating the liquefied head product into a water-rich fraction and an alcohol-rich fraction; and

returning the alcohol-rich fraction from the head of the column to the catalytic reaction zone as a starting material for the esterification step and to the sump for the production of the stripping gas.

2. (currently amended) A method in accordance with claim 1 characterised in that water and alcohol are separated with the stripping gas out of the liquid mixture which leaves the reaction zone.

3. (original) A method in accordance with claim 1 characterised in that a further

packing is incorporated above the stripping section in which fatty acid carried in the stripping gas is transferred to a part of the alcohol-rich fraction returned to the column from the head of the column.

4. (original) A method in accordance with one of the claims 1 to 3 characterised in that alcohol is fed into the reaction zone to contribute to the flow of the stripping gas in vaporized form.

5. (original) A method in accordance with claim 1 wherein said step of separating the liquefied head product into a water-rich fraction and an alcohol-rich fraction is performed by one of pervaporation, phase separation and distillation.

6. (original) A method in accordance with claim 1 further comprising the step of conducting a partial esterification of the fatty acid and an alcohol mixture to form a mixture of fatty acid, alcohol, ester and water and applying said latter mixture into or above the catalytic reaction zone.

7. (original) A method in accordance with claim 1 further comprising the step of separating a part of a mixture from the sump of the column to obtain a fatty acid ester E with a purity of at least 99 % by weight.

8. (original) A method in accordance with claim 1 characterised in that the fatty acid is selected from the group consisting of at least one of the C12-, C14-, C16-, C18-, C18'- and C18"- fatty acids and the alcohol is selected from the group consisting of at least one of methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol and 2-ethyl-hexanol.

9. (original) A method in accordance with claim 8 wherein said fatty acid is at least one of lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid and linoleic acid.

10. (original) A plant for the production of the ester E by means of a heterogeneous catalysis comprising

a column;

a packing disposed in said column for carrying out a heterogeneous catalysis of a fatty acid and alcohol, said packing including porous catalyst supports defining flow channels therebetween for passage of a stripping gas between said catalyst supports and catalyst within said porous catalyst supports;

a distributor for directing a downwardly directed flow of a mixture of fatty acid and alcohol onto said packing for passage through said catalyst supports in counter-flow to an upwardly directed flow of stripping gas with the mixture in direct contact with the gas to allow a material exchange to take place;

a sump below said packing for receiving alcohol from said packing and for generating an upward flow of stripping gas from the alcohol in said sump.

11. (original) A plant as set forth in claim 10 wherein said catalyst is an inorganic catalyst in acidic form and suitable for use in a temperature range of from 150° to 230°C.

12. (original) A plant as set forth in claim 10 wherein said catalyst is an ion exchange macroporous resin in acidic form and suitable for use in a temperature range of up to 140°C.

13. (new) A method in accordance with claim 1 further comprising the steps of distilling the liquid sump product in a second column to obtain an alcohol rich vapor head product at an upper end of the second column and a fatty acid ester.

Remarks

Claims 1 to 13 are in this application.

Method claims 1 to 9 and 13 are elected.

Respectfully submitted,

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